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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/000,119 | 10/31/2001 | Thomas Malzbender | 100110200 | 8981 |

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

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| EXAMINER |
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NGUYEN, PHU K

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| ART UNIT | PAPER NUMBER |
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2671

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DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/000,119

Applicant(s)

MALZBENDER ET AL.

Examiner

Phu K. Nguyen

Art Unit

2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-49 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over MILLER et al. (On-the-Fly Texture Computation for Real-time Surface Shading) in view of NEYRET et al. (Pattern-Based Texturing Revisited).

As per claim 1, Miller, teaches the claimed "method of rendering an image", comprising "generating a parametric texture map of a subject" (Miller, page 50, column 2, lines 7-9) that contains "at least one varying parameter in a set of varying parameters for an equation that defines variation in pixel color" (Miller, page 51, column 2, lines 13-24). It is noted that Miller does not teach "without modeling geometric configurations of

said subject, and wherein each varying parameter in said equation corresponds to a varying condition". Neyret teaches that "in parametric texture mapping of a subject without modeling geometric configurations of said subject, and each parameter is assigned to vary correspondently with a condition" (Neyret, page 237, column 2, lines 30-33; figure 3). It would have been obvious at the time the invention was made, in view of the teaching of Neyret, to configure Miller's method as claimed because Miller's parametric texture map could be implemented to have the parameters representing for the condition of the mapping surface without modeling geometric configurations of said subject, and wherein each varying parameter in said equation corresponds to a varying condition to reducing the complexity of the rendering processing.

Claim 2 adds into claim 1 "for every subpixel that is displayed for said image, interpolating a set of coefficients for said equation from data taken on said subject from a plurality of sample points taken over a range of conditions associated with said varying condition; and for every subpixel that is displayed for said image, storing said set of coefficients that is interpolated in said parametric texture map" which would have been obvious because the interpolation for subpixel reduces the calculation of each pixel data.

Claim 3 adds into claim 1 "rendering said image by evaluating said equation for every subpixel that is displayed for said image for a given set of parameters in said set

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of varying parameters" which would have been obvious because the evaluation of value for subpixel based on said equation reduces the calculation of each pixel data.

Claim 4 adds into claim 1 "displaying said subject in said image that is of two-dimensions" which Miller teaches in page 51, figures 1 and 2.

Claim 5 adds into claim 1 "wherein said pixel color is taken from an RGB group of colors consisting of: red; green; and blue" which would have been obvious because Miller's color display would contain three basic color components of red, green, and blue.

Claim 5 adds into claim 1 "wherein said condition varies in time" which would have been obvious because Miller's animation implies the change of object's surface, and its parametric texture map, in time.

Claim 7 adds into claim 1 "wherein said condition varies in focus" which would have been obvious because Miller's display of objects with different viewpoint implies the change of object, and its parametric texture map, in focus.

Claim 8 adds into claim 1 "wherein said condition varies in light direction" which would have been obvious because Miller's light models (page 45, column 2) implies the change of light components.

Claim 9 adds into claim 1 "wherein said varying condition is a varying incidence angle that leads to color variation for Fresnel materials" which would have been obvious because Miller's light vector components (i.e., diffuse, specular, environment components) and the surface conditions include the incidence angle and object's material (Miller, page 50, figure 1; column 2, lines 1-5).

Claim 10 adds into claim 1 the step of "generating said parametric texture map of said subject for a polynomial equation" which Miller teaches in column 2, lines 7-18.

Claim 11 adds into claim 1 the steps of "generating said parametric texture map for said equation that defines variation in luminance per pixel; and scaling fixed RGB values per pixel to define said variation in pixel color" which would have been obvious because Miller's pixel color is calculated from the luminance light and its color could have contained three RGB color components.

Claims 23-33 claim a system based on the method of claims 1-11; therefore, they are rejected under the same reason.

Claims 42-49 claim a system based on the method of claims 1-11; therefore, they are rejected under the same reason.

As per claim 12, Miller, teaches the claimed "method of rendering an image", comprising "generating a parametric texture map of a subject" (Miller, page 50, column 2, lines 7-9) that contains "at least one varying parameter in a set of varying parameters for an equation that defines variation in pixel luminance" (Miller, page 51, column 2, lines 13-24). It is noted that Miller does not teach "without modeling geometric configurations of said subject, and wherein each varying parameter in said equation corresponds to a varying effect". Neyret teaches that "in parametric texture mapping of a subject without modeling geometric configurations of said subject, and each parameter is assigned to vary correspondently with an effect" (Neyret, page 237, column 2, lines 30-33; figure 3). It would have been obvious at the time the invention was made, in view of the teaching of Neyret, to configure Miller's method as claimed because Miller's parametric texture map could be implemented to have the parameters representing for the effect of the mapping surface without modeling geometric configurations of said subject, and wherein each varying parameter in said equation corresponds to a varying condition to reducing the complexity of the rendering processing.

Claim 13 adds into claim 12 "for every texel that is displayed, interpolating a set of coefficients for said equation from data taken from a plurality of sample points on said object; and for every texel that is displayed, storing said set of coefficients in said parametric texture map" which would have been obvious because the interpolation for texel reduces the calculation of each display element data.

Claim 14 adds into claim 12 the step of "rendering said image by evaluating said equation for a given set of parameters in said set of varying parameters" which would have been obvious because the evaluation of value for display element based on said equation reduces the calculation of each pixel data.

Claim 15 adds into claim 12 "said image of said object is displayed in two-dimensions" which Miller teaches in page 51, figures 1 and 2.

Claim 16 adds into claim 12 "said parametric texture map is generated for each color per pixel that is displayed for said image" which Miller teaches in page 50, column 2, lines 7-18.

Claim 17 adds into claim 12 "said pixel color is taken from an RGB group of colors consisting of: red, green, and blue" which would have been obvious because Miller's color display would contain three basic color components of red, green, and blue.

Claim 18 adds into claim 12 "said effect varies in time" which would have been obvious because Miller's animation implies the change of object's surface, and its parametric texture map, in time.

Claim 19 adds into claim 12 "said effect varies in focus" which would have been obvious because Miller's display of objects with different viewpoint implies the change of object, and its parametric texture map, in focus.

Claim 20 adds into claim 12 "wherein said condition varies in light direction" which would have been obvious because Miller's light models (page 45, column 2) implies the change of light components.

Claim 21 adds into claim 12 "said effect is a Fresnel effect" which would have been obvious because Miller's light vector components (i.e., diffuse, specular, environment components) and the surface conditions include the incidence angle and object's Fresnel effect (Miller, page 50, figure 1; column 2, lines 1-5).

Claim 22 adds into claim 12 the step of "generating said parametric texture map of said subject for a polynomial equation" which Miller teaches in column 2, lines 7-18.

Claims 34-41 claim a computer-readable medium having a parametric map stored thereon based on the method of claims 12-22; therefore, they are rejected under the same reason.

Due to new ground of the rejection cited above, this action has been made NON-FINAL.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (703)305 - 9796. The examiner can normally be reached on M-F 8:00-4:30.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3800.

Phu K. Nguyen
April 19, 2004

Phu K. Nguyen
PHU K. NGUYEN
EXAMINER
CHIEF OF